

light intensity 1.75:100; evaporating power of the air 1:2.3; humidity up to 100:84; wind velocity 1:2.2; and temperature from 1° to 2° C. higher at the latter position. Green and dry weights of leaves in the center of the crown were 46 and 38 per cent respectively of equal areas at the south periphery, while cross-sections showed differences of structure as great as those of weight, the average thickness of the centrally placed leaves being only 38 per cent of those at the periphery. The other species studied showed variations quite as interesting as those cited, the loss of water by transpiration showing a range of 3-12 times as much from leaves upon the south periphery as from equal leaf areas within the crown.

The investigation is particularly important in opening up a field of promising and almost unlimited possibilities in the study of structural response of aërial organs to measured variations in external factors.—GEO. D. FULLER.

Vegetation of Dutch Guinea.—Miss GIBBS²⁹ has added to her contributions to our knowledge of little known floras by exploring portions of the mountainous parts of Dutch N.W. New Guinea. The plant formations receiving most attention were the low mountain forest above 7000 ft., in which the dominant trees were *Quercus Lauterbachii*, *Podocarpus Rumphii*, *P. papuanus*, and *Phyllocladus hypophyllus*. These attained a height of some 16 m., with plenty of lianas, among which such ferns as *Gleichenia linearis*, *Nephrolepis acuminata*, and *Polybotrya arfakensis* were conspicuous. There were transitions to a mossy forest in which to the preceding trees there were added, among others, *Dacrydium novo-guineense* and *Librocedrus arfakensis*, making a remarkable aggregate of conifers, together with *Drimys arfakensis* and several Myrtaceae. Here a rich undergrowth of mosses, ferns, and herbaceous plants combined with an abundance of many epiphytic ferns and orchids. Locally in marshy localities there were found pure stands of the endemic *Araucaria Beccarii*. With increasing altitude the mossy forest decreased in height, although many of the same tree species persisted, with the addition of species of *Rhododendron* and several other ericaceous shrubs, as the mountain crest of 9000 ft. was reached. Here the trees were low and scrubby, the stand more open, and the growth of undershrubs more dense.

Miss GIBBS has recorded many interesting incidents of her trip and described less minutely other plant associations, but declares that she saw no forest that answered to the description of rain forest. Her collections showed 330 species, of which 100 were hitherto unknown; they included in addition 5 new genera.—GEO. D. FULLER.

Verbascum hybrids.—It has long been known that many hybrids occur in the genus *Verbascum*. FOCKE, SCHIFFNER, and others have made observations

²⁹ GIBBS, LILIAN S., A contribution to the phytogeography and flora of the Arfak Mountains, etc. Dutch N.W. New Guinea. 8vo. pp. iv+226. pls. 4. figs. 16. London: Taylor and Francis. 1917. 12/6.